M E M O R A N D U M

March 24, 1980

TO: JOHN G. BROOKS, Acting Chief
Enforcement Section

FROM: ROBERT KOENTOP, Environmental Specialist RK
Enforcement Section

SUBJECT: Sampling/Analysis of Treatment System at A. L. Taylor

Attached are two (2) analyses regarding the influent and effluent for the treatment system at the A. L. Taylor site.

1. From Environmental Consultants, Inc., under contract by the Federal E.P.A.

2. From Kentucky Air Pollution Control Lab (samples were taken by our Division).

While the Kentucky Air Pollution results contain little information, E.C.I.'s results seem to point to the right course of analysis to use.

Both organic identification/quantification and toxic metals analysis should be implemented on all treatment system samples taken (influent and effluent). The following should be analyzed for:

1. Organic Solvents
2. Toxic Metals:
   a. Cadmium
   b. Chrome
   c. Mercury
   d. Lead
3. PCB Quantification

NOTE: In ECI #14,708: Four isomers of chlorinated biphenol were detected (additional to PCB 1260). I, therefore, feel this warrants further investigation.

It must be pointed out that these sampling/analysis procedures are for a specific reason - to determine if the present activated carbon is in the treatment system is "spent" and therefore needs to be replaced. Thus, all decisions and consequential actions need to be dealt with immediately.

RK/lrw

Attachment

cc: Ross Singleton
Dan Dolan
Warren Peace

Sample Description: INFLUENT TO TREATMENT POND

E.C.I. #14,659

Actions:

The sample was analyzed for solvents by GC/FID.

ANALYSES RESULTS

Compound	Amount	Method
2-Butanone (methyl ethyl ketone)		GC/FID
4-Methyl, 2-Pentanone (methyl isobutyl ketone)		GC/FID
Toluene		GC/FID
Ethyl benzene		GC/FID
Xylenes (ortho, meta, para)	3 ppm. (Total amount)	GC/FID

Sample Description: EFFLUENT FROM TREATMENT PLANT AFTER CHARCOAL FILTRATION

E.C.I. #14,676

Actions:

The sample was analyzed for solvents by GC/FID and GC/MS.

ANALYSES RESULTS

Compound	Amount	Method
4-Methyl, 2-Pentanone (methyl isobutyl ketone)		GC/FID
Toluene		GC/FID
Ethyl benzene		GC/FID

E.C.I. #14,676 (Cont.)

ANALYSES RESULTS

Compound	Amount	Method
Xylenes (ortho, meta, para) (Total amount)	22 ppb.	GC/FID
Carbon tetrachloride	*	GC/MS
Trichloroethene	*	GC/MS
2 Methyl, 2-Pentanone (methyl isobutyl ketone)	*	GC/MS
Tetrachloro-ethene	*	GC/MS
Toluene	*	GC/MS
Ethyl benzene	*	GC/MS
Xylenes (ortho, meta, para)	*	GC/MS

*--Not quantified by GC/MS

Sample Description: SOIL SAMPLE TAKEN NEAR A PILE OF REFUSE WHERE SUSPECTED PCB CONTAMINATION EXISTS

E.C.I. #14,708

Actions:

The sample was extracted and analyzed by GC/EC and confirmed by GC/MS.

ANALYSES RESULTS

Compound	Amount
PCB 1016	
PCB 1242	
PCB 1260	0.313 ppm. (wet basis)

PCB's confirmed on the basis of detection by GC/MS of four (4) isomers of chlorinated biphenol (trichlorophenol; tetrachlorophenol; hexachlorophenol; and heptachlorophenol).

Sample Description: INFLUENT TO TREATMENT

E.C.I. #14,753

Actions:

The sample was analyzed for solvents by GC/FID.

ANALYSES RESULTS

Compound	Amount	Method
2-Butanone (methyl ethyl ketone)		GC/FID
4-Methyl, 2-Pentanone (methyl isobutyl ketone)		GC/FID
Toluene		GC/FID
Ethyl benzene		GC/FID
Xylenes (ortho, meta, para)		GC/FID
Five (5) other unkowns (Total amount)	2 ppm.	

Sample Description: EFFLUENT FROM TREATMENT AFTER CARBON FILTRATION

E.C.I. #14,754

Actions:

The sample was analyzed for solvents by GC/FID.

E.C.I. #14,754 (Cont.)

ANALYSES RESULTS

Compound	Amount	Method
4-Methyl, 2-Pentanone (methyl isobutyl ketone)		GC/FID
Toluene		GC/FID
Ethyl benzene		GC/FID
Xylene		GC/FID
Five (5) other unknowns	16 ppb. (Total amount)	

M E M O R A N D U M

February 27, 1980

TO: DAN DOLAN, Chief
Technical Assistance Section

FROM: ROBERT KOENTOP, Environmental Specialist
Enforcement Section

SUBJECT: Sample Analyses at the A.L. Taylor Site

Attached are analyses of influent and effluent samples taken at the collection/treatment system at the Valley of the Drums.

Please advise me if these results can be useful for:

1. Use as a control factor for future effluent analyses. (Note: these samples were taken immediately after new granular activated carbon was installed.)

2. Determining further sampling/analysis procedures in relation to a periodic monitoring program.

3. Determining if these results can be used in conjunction with the analytical results done by Environmental Consultants, Inc. (see memorandum dated December 3, 1979) on both the influent and effluent.

RK/lrw

Attachment

Bob

Jackie Swigart
Secretary

JOHN Y. BROWN, JR.
Governor

COMMONWEALTH OF KENTUCKY
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR POLLUTION CONTROL
WEST FRANKFORT OFFICE COMPLEX
1050 U.S. 127 BYPASS SOUTH
FRANKFORT, KENTUCKY 40601

M E M O R A N D U M

January 8, 1980

TO: Linda Blaine, Senior Chemist
Division of Hazardous Materials & Waste Management

FROM: Diana Andrews, Chief DA
Laboratory Services Section
Kentucky Division of Air Pollution Control

SUBJECT: Report of Analysis: Ether Extracts of Water Samples
Submitted 12/10/79

Two sets of samples were received: INF 1-4, and EF 1-4, along with an empty vial labeled "Reagent Blank". Gas chromotographic screening using an FID showed INF 1 to be identical in composition to INF 2-3; similarily EF 1 was identical to EF 2-4. Therefore, only INF 1 and EF 1 were analyzed using the GC/MS/DS.

The samples were analyzed using a Finnigan 4021 gas chromatograph/ mass spectrometer in electron ionization mode; scanning 34-650 AMU in 2.95 sec. Usual operating conditions were maintained for the mass spectrometer. The appropriate instrument diagnostics are reproduced with the data files.

The chromatographic column was a ¼" O.D., 2mm I.D., 6' glass column of 0.1% SP-1000 on Carbopak C. The chromatographic conditions were as follows: Uncorrected carrier flowrate: 20 ml/min.; 1 min. initial hold at 50° C, programmed to 225° C at 8° C/min., final hold at 225° C.

Compounds were identified by computerized spectral matching with the NBS mass spectra library. Quantitation was accomplished by normalization of peak areas using all ions in the spectra and should be considered only an approximation.

Results
Sample INF-1

Compound	Approximate Wt. Percent
Uncertain, (C_2H_4O or C_3H_8)	2.23
ethanol	0.47
2-propanone, acetone	0.02
formic acid, ethyl ester	0.69

Results Sample INF-1 (Cont'd)

Compound	Approximate Wt. Percent
diethyl ether, (solvent peak)	
acetic acid, ethylester (ethyl acetate)	96.15
2-propenoicacid, 2-methyl-, methylester, (methyl methcrylate)	0.04
hexanal, (capraldehyde)	0.05
3-methyl-2-butanol	0.13
2-ethoxypropane	0.07
carbamicacid, methyl-, phenylester	0.16

Sample EF-1

Compound	Approximate Wt. Percent
uncertain	0.62
uncertain	2.57
ethanol	0.96
acetone	<0.01
uncertain	0.03
formic acid, ethylester	1.12
solvent peak	
ethyl acetate	94.00
uncertain	0.09
N, N-dimethyl acetamide	0.06
3-methyl-2-butanol	0.16
2-pentanol	0.09
2-hexanone	0.04
5-methyl-2-hexanol	0.25

Comment:

As you are aware, the sample preparation procedures used for organics-in-water dictate the limits of the analysis. The diethyl ether extraction did not allow resolution of many of the lesser components of the sample. Further, it is improbable that the extract contained all compounds originally present in the sample. I mention this only to caution the interpretation of these results as being an exhaustive list of the materials in the sample.

We are eager to assist in any way we might in the incorporation of the priority pollutant protocol for sample preparation and analysis; for then not only will the data be more complete but the analysis will benefit from the standardization of procedures.

DA/RAM/jh

Attachment

cc: Hisham Sa'aid
Norman Schell

REQUEST FOR ANALYTICAL SERVICES
LABORATORY SERVICES SECTION
Division of Air Pollution Control
Kentucky Department for Natural Resources & Environmental Protection

I. D. No. ____________

SAMPLE DESCRIPTION: ether extractions of Valley of Drums "influent" + "effluent" + reagent blank

SAMPLE COLLECTED BY: Bob Keating DATE: 11/28/79

COLLECTION PROCEDURE: ____________

SPECIAL HANDLING REQUIRED: ____________

TYPE OF ANALYSIS REQUESTED: gc/ms scan (SCOTT BRYANT 3530)

PRIORITY CODE: 0 PRECISION CODE: N/A

FORWARD ANALYTICAL REPORT TO: Linda Blair, Sr. Ch.

SAMPLE DISPOSITION: ____________

AUTHORIZED BY: Don Dulan, Chief, Haz. Section

SAMPLE RECEIVED BY: Alan Miller DATE: 12/10/79

APPLICABLE METHOD: ____________

ANALYST(S) ASSIGNED: ____________

SPECIAL INSTRUCTIONS: ____________

ANALYST(S): Am

ANALYSIS COMPLETED: 12/14/79

REPORT SUBMITTED: 1/2/80

COMMENTS: VIAL LABELED "REAGENT BLANK" WAS EMPTY UPON RECEIPT

PRIORITY CODE

0....Do chronologically, no priority

1....All necessary personnel work on this analysis till complete.

2....All necessary personnel work normal shift on this analysis.

3....Placed first on chronological list.

PRECISION CODE

0....Not Applicable

1....Best obtainable

2....± 1% or less.

3....± 1-5%

4....± 5-20%

DAPC 182